

SEQUENCE LISTING

<110> Kobayashi, Masanori  
Ueda, Yasuji  
Hasegawa, Mamoru

<120> Methods of Producing a Viral Vector  
Comprising a Membrane Protein That Binds To Sialic Acid As A  
Component Of The Envelope Using Neuraminidase Derived From  
Gram-Positive Bacteria

<130> 50026/050001

<150> PCT/JP03/11299

<151> 2003-09-04

<150> JP 2002-258576

<151> 2002-09-04

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| tcc ccc gca cag gcc atc gcc ggg gca ccc gtc ccg ccc ggc ggc gag | 144 |
| Ser Pro Ala Gln Ala Ile Ala Gly Ala Pro Val Pro Pro Gly Gly Glu |     |
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| ccg ctc tac acg gag cag gac ctc gcc gtg aac ggc agg gag ggc ttt | 192 |
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| ctg gcc tcg tac gac ggc cgc ccg acc ggt atc gac gcg ccc ggc ccc | 288 |
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| Glu Gln Gln Val Val Ser Ala Gly Gln Thr Thr Ala Pro Ile Lys Gly |      |
| 115 120 125   |      |
| ttc tcc gac ccc agc tac ctt gtc gac cgg gaa acc ggg acc atc ttc | 432  |
| Phe Ser Asp Pro Ser Tyr Leu Val Asp Arg Glu Thr Gly Thr Ile Phe |      |
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| Asn Phe His Val Tyr Ser Gln Arg Gln Gly Phe Ala Gly Ser Arg Pro |      |
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| 165 170 175   |      |
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| Ser Thr Asp Gly Gly Leu Thr Trp Ser His Arg Thr Ile Thr Ala Asp |      |
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| Ile Thr Pro Asp Pro Gly Trp Arg Ser Arg Phe Ala Ala Ser Gly Glu |      |
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| Gly Ile Gln Leu Arg Tyr Gly Pro His Ala Gly Arg Leu Ile Gln Gln |      |
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| Tyr Thr Ile Ile Asn Ala Ala Gly Ala Phe Gln Ala Val Ser Val Tyr |      |
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| Ser Asp Asp His Gly Arg Thr Trp Arg Ala Gly Glu Ala Val Gly Val |      |
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| Gly Met Asp Glu Asn Lys Thr Val Glu Leu Ser Asp Gly Arg Val Leu |      |
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| Leu Asn Ser Arg Asp Ser Ala Arg Ser Gly Tyr Arg Lys Val Ala Val |      |
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| Ser Thr Asp Gly Gly His Ser Tyr Gly Pro Val Thr Ile Asp Arg Asp |      |
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| gcc ccg gcc ggc tcc gcg cgg gcc aag gtc ctg ctc ttc tcc aac gcc | 1008 |

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| tac | gag | ccg | ggc | acc | ggc | atc | aga | tac | gcc | aac | ttc | aac | ctc | gcc | tgg | 1200 |
| Tyr | Glu | Pro | Gly | Thr | Gly | Ile | Arg | Tyr | Ala | Asn | Phe | Asn | Leu | Ala | Trp |      |
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| Leu | Gly | Gly | Ile | Cys | Ala | Pro | Phe | Thr | Ile | Pro | Asp | Val | Ala | Leu | Glu |      |
|     |     |     |     | 405 |     |     |     |     | 410 |     |     |     |     | 415 |     |      |
| ccg | ggc | cag | cag | gtc | act | gtt | ccg | gtg | gcc | gtc | acg | aac | cag | tcc | ggt | 1296 |
| Pro | Gly | Gln | Gln | Val | Thr | Val | Pro | Val | Ala | Val | Thr | Asn | Gln | Ser | Gly |      |
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| atc | gcg | gta | ccg | aag | ccg | agc | ctt | cag | ctc | gac | gca | tcg | ccg | gac | tgg | 1344 |
| Ile | Ala | Val | Pro | Lys | Pro | Ser | Leu | Gln | Leu | Asp | Ala | Ser | Pro | Asp | Trp |      |
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| cag | gtt | cag | ggt | tcc | gtc | gag | ccc | ctc | atg | ccc | gga | cgg | cag | gcc | aag | 1392 |
| Gln | Val | Gln | Gly | Ser | Val | Glu | Pro | Leu | Met | Pro | Gly | Arg | Gln | Ala | Lys |      |
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| Gly | Gln | Val | Thr | Ile | Thr | Val | Pro | Ala | Gly | Thr | Thr | Pro | Gly | Arg | Tyr |      |
|     |     |     | 465 |     |     | 470 |     |     |     | 475 |     |     |     |     | 480 |      |
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| Asp | Val | Asp | Ser | Glu | Glu | Thr | Ala | Arg | Glu | Asp | Gly | Arg | Ala | Ser | Asn |      |
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| gcc | gat | gct | cct | ggc | tac | ccg | cac | cgc | atc | agc | ctc | gac | ctc | ggt | ggc | 1680 |
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 Glu Gln Gln Val Val Ser Ala Gly Gln Thr Thr Ala Pro Ile Lys Gly  
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 Phe Ser Asp Pro Ser Tyr Leu Val Asp Arg Glu Thr Gly Thr Ile Phe  
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 Gly Thr Asp Pro Ala Asp Pro Asn Val Leu His Ala Asn Val Ala Thr  
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 Ser Thr Asp Gly Gly Leu Thr Trp Ser His Arg Thr Ile Thr Ala Asp  
 180 185 190  
 Ile Thr Pro Asp Pro Gly Trp Arg Ser Arg Phe Ala Ala Ser Gly Glu  
 195 200 205

|     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
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| 210 |     |     |     |     |     | 215 |     |     |     | 220 |     |     |     |     |     |
| Tyr | Thr | Ile | Ile | Asn | Ala | Ala | Gly | Ala | Phe | Gln | Ala | Val | Ser | Val | Tyr |
| 225 |     |     |     | 230 |     |     |     |     | 235 |     |     |     |     |     | 240 |
| Ser | Asp | Asp | His | Gly | Arg | Thr | Trp | Arg | Ala | Gly | Glu | Ala | Val | Gly | Val |
|     |     |     | 245 |     |     |     |     | 250 |     |     |     |     |     | 255 |     |
| Gly | Met | Asp | Glu | Asn | Lys | Thr | Val | Glu | Leu | Ser | Asp | Gly | Arg | Val | Leu |
|     |     | 260 |     |     |     |     | 265 |     |     |     |     |     | 270 |     |     |
| Leu | Asn | Ser | Arg | Asp | Ser | Ala | Arg | Ser | Gly | Tyr | Arg | Lys | Val | Ala | Val |
|     | 275 |     |     |     |     | 280 |     |     |     |     |     | 285 |     |     |     |
| Ser | Thr | Asp | Gly | Gly | His | Ser | Tyr | Gly | Pro | Val | Thr | Ile | Asp | Arg | Asp |
| 290 |     |     |     |     |     | 295 |     |     |     |     | 300 |     |     |     |     |
| Leu | Pro | Asp | Pro | Thr | Asn | Asn | Ala | Ser | Ile | Ile | Arg | Ala | Phe | Pro | Asp |
| 305 |     |     |     | 310 |     |     |     |     |     | 315 |     |     |     |     | 320 |
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|     |     |     | 325 |     |     |     |     | 330 |     |     |     |     |     | 335 |     |
| Ala | Ser | Gln | Thr | Ser | Arg | Ser | Gln | Gly | Thr | Ile | Arg | Met | Ser | Cys | Asp |
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| Asp | Gly | Gln | Thr | Trp | Pro | Val | Ser | Lys | Val | Phe | Gln | Pro | Gly | Ser | Met |
|     | 355 |     |     |     |     | 360 |     |     |     |     | 365 |     |     |     |     |
| Ser | Tyr | Ser | Thr | Leu | Thr | Ala | Leu | Pro | Asp | Gly | Thr | Tyr | Gly | Leu | Leu |
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| Tyr | Glu | Pro | Gly | Thr | Gly | Ile | Arg | Tyr | Ala | Asn | Phe | Asn | Leu | Ala | Trp |
| 385 |     |     |     | 390 |     |     |     |     | 395 |     |     |     |     |     | 400 |
| Leu | Gly | Gly | Ile | Cys | Ala | Pro | Phe | Thr | Ile | Pro | Asp | Val | Ala | Leu | Glu |
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| Ile | Ala | Val | Pro | Lys | Pro | Ser | Leu | Gln | Leu | Asp | Ala | Ser | Pro | Asp | Trp |
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| Gln | Val | Gln | Gly | Ser | Val | Glu | Pro | Leu | Met | Pro | Gly | Arg | Gln | Ala | Lys |
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| Ala | Asp | Ala | Pro | Gly | Tyr | Pro | His | Arg | Ile | Ser | Leu | Asp | Leu | Gly | Gly |
| 545 |     |     |     | 550 |     |     |     |     | 555 |     |     |     |     |     | 560 |
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|     | 595 |     |     |     |     | 600 |     |     |     |     |     | 605 |     |     |     |
| Pro | Gln | Arg | Ala | Val | Phe | Pro | Ala | Arg | Asp | Ala | Arg | Tyr | Ile | Arg | Leu |
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| Val | Ala | Leu | Ser | Glu | Gln | Thr | Gly | His | Lys | Tyr | Ala | Ala | Val | Ala | Glu |
| 625 |     |     |     | 630 |     |     |     |     | 635 |     |     |     |     |     | 640 |
| Leu | Glu | Val | Glu | Gly | Gln | Arg |     |     |     |     |     |     |     |     |     |
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